Wahrheit – Sein – Struktur

Auseinandersetzungen mit Metaphysik

Herausgegeben von
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und Dirk Greimann

2000
Georg Olms Verlag
Hildesheim · Zürich · New York

ONTOLOGICAL CATEGORIES: THE EXPLANATION OF CATEGORIAL INFERENCE

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The "myth of the ghost in the machine," the "myth of the museum, and the "myth of the given" have a companion in ontology: the myth of substance. Despite recent formal sophistication – in fact, even strongly supported by the standard interpretation of predicate logic – ontological thinking still is dominated by the categorial dualism of 'thisness' and 'suchness', of objects and properties. Surprisingly few contemporary philosophers explicitly address let alone diagnose this curious conservativism. Among those who did we find philosophers that otherwise are not encountered in closer proximity, such as Whitehead, Dewey, Carnap, Heidegger, or Sellars. However different the constructive responses championed by each of these figures, they share a critical awareness for the strictures of the substance-ontological research paradigm. In fact, one might argue that the most significant foundational contributions to the ontology of the 20th century derive from a deep and insistent methodological reflection of substance-ontological preconceptions. For such a claim the work of Lorenz Puntel provides a strong case in point. During the last two decades, while working out what can count as the so far most coherently developed coherence theory of truth, Puntel has effectively shown that the "object-ontological dogma" in analytical ontology is the crucial impediment to a satisfactory treatment of the notion of truth and of those ontological problems that any truth theory must address. His ontology of „Verhalte," of non-composite state of affairs, is one of the very few serious attempts to overcome the substance paradigm that the ontology of the 20th century has to offer, and perhaps so far the most successful one.

In what follows I offer methodological observations in support of Puntel's call for the categorial liberalization of ontology, even if I approach this common goal along a somewhat different path. In the first two sections I distinguish ontology, which I define as an explanatory theory of truth-makers, from metaphysics and semantics. Then I describe the role of ontological categories and various heuristic strategies to arrive at categories. I point to some of the presuppositions concerning category construction that are operative in the 'myth of substance,' as well as one way ('Dynamic Mass Theory') to undercut them. Finally, I give an account of two forms of ontological 'reduction' or recategorization and illustrate these by means of process-ontological recategorizations as sketched in Sellars' *Carus Lectures*.

1. ONTOLOGY AND METAPHYSICS

Methodological considerations typically are mongrel speech acts that combine description and prescription. The following observations share this illocutionary

ambiguity—they aspire to descriptive adequacy yet amount at once to terminological proposals, in so far as some examples are treated as more prototypical than others. For present purposes I shall resort to a 'contentious' mode of exposition, trusting that a reader sufficiently familiar with current research in analytical ontology will easily associate the bibliographical documentation of my claims; wherever the latter is less obvious, I shall give some references.[1]

The abstract mass term 'ontology' is commonly used to talk about a philosophical discipline, in contrast to the count term '(an) ontology', which is used to denote one of the theories that constitute that discipline. As a first approximation we can define an ontology as a theory of truth-makers: *an ontology describes entities that can rationally be taken to make (a certain class of) sentences of a (natural or scientific) language L true.* This is a preliminary characterization whose components shall be elaborated in this and the subsequent section, in order to arrive at the more precise formulation (ONT) stated at the end of section 2.

Let us begin then with a closer look at the notion of a 'truth-maker', which originates from Husserl and has recently been brought again into currency to denote any kind of entity or complex of entities in virtue of which sentences and/or propositions can be taken as true.[2] In contrast, truth-bearers are entities such as sentences or the content of beliefs that are said to be true or false. The notion of truth, e.g., the choice between a correspondence or coherence account, cannot be determined without deciding which entities fulfill the function of truth-bearers and which the function of truth-makers, and it cannot be determined without entering the metaphysical realism/idealism debate. Similarly, one cannot develop an account of truth-makers without determining what might count as a possible – though perhaps not the only – type of truth-bearer. *But it is crucial to realize that one may well investigate the question of what type of entities in their world L-speakers can rationally accept as making their sentences or beliefs true without giving a philosophical account of truth and without taking a stance within the realism-idealism debate.* The questions of ontology, i.e., questions about the structure of truth-makers, do not require a previous clarification of the nature of the relationship between truth-bearer and truth-maker, and in particular, of the notion of truth. Whether a sentence (or content of a belief) is made true by a state of affairs, a characterized object, a relational complex, a trope configuration, or a complex process etc. does not depend on whether we take 'is true' or 'is true-in-L' to denote a relation of correspondence or coherence, or as expressing a „pro-sentence" or „re-sentence" etc. It would be a misunderstanding to believe that the very business of ontology or the notion of a truth-maker

[1] For further references compare Seibt (1990b), (1995), (1996b) and (2000c), respectively.
[2] Mulligan/Simons/Smith (cf. 1984: 287) determine truth-makers as entities „in virtue of which sentences and/or propositions *are true*" (emphasis supplied).

presupposes a correspondence theory of truth. Ontology certainly proceeds from the assumption that L-speakers understand their true sentences to say something about the 'world-as-L-speakers-see-it'. But the 'world-as-we-L-speakers-see-it', our world, may or may not be 'reality' in the sense that matters to the participants of the 'realism-idealism-debate'. Talk about 'truth-conditions' tends to blur a crucial distinction. The question of *what it is that makes a sentence true* (i.e., the conditions under which the sentence is true) can be answered without answering the question of *what has been accomplished when a sentence is made true* (i.e., the conditions under which one may use the expression 'is true'). The property called 'truth' that is 'made' or established if, say, certain substances exemplify certain attributes (alternatively: by the obtaining of a certain state of affairs, by the occurrence of a certain trope configuration or complex process etc.) may well be spelled out in terms of conditions of intersentential coherence. Correspondence theorists and coherentists both agree that we (L-speakers) take our true sentences to be about our world or that we believe that there is something in our world which 'makes' our true sentences true; they merely differ with regard to the question whether truth-makers, the components of our world, can be considered as (mind- or) language-dependent entities, i.e., they differ with respect to the metaphysical valuation of truth-makers.[3] Truth-makers are entities internal to the world of L-speakers and as such are indifferent to the 'external', metaphysical evaluation of this world in terms of a realist or idealist position, as either mind-independent reality or reality-in-itself, or a Kantian world of experience, a Hegelian reality-for-L-speakers, a Goodmanian „well-made" world and so forth.

That a theory of truth-makers can be given without entering the debate about the nature of truth has been obscured by the fact that the tradition of metaphysics characteristically combined truth-theoretical investigations – leading directly into issues of metaphysical valuations (realism-idealism controversy) – with investigations into the structure of truth-makers (e.g., nominalism-platonism controversy). Since Carnap's *Aufbau,* however, it has been recognized that the construction of truth-makers presents a separable research project, for which Quine and Goodman revived the label 'ontology'.[4] In the contemporary division of disciplines in analytical philosophy we have thus 'analytical metaphysics',

[3] I discard here from the coherentist camp the untenable position of an extreme „linguistic idealism" which bungles the crucial distinction between, in Puntel's terms, „extra-linguistic" vs. „language-dependent" entities (cf. Puntel 1990). An idealist coherentist can be taken seriously only insofar as she acknowledges that truth-makers are extra-linguistic entities (a table is not a 'table') but maintains that the conditions of numerical and sortal identity of these entities are in some sense (mind- or) language-dependent.

[4] The fact that Carnap himself continued to eschew the label 'ontology' and that Quine and Goodman again combined ontological investigations with a metaphysical stance, namely, pragmatism, certainly has done much to veil Carnap's insight about the separability of the ontological and the metaphysical research perspective.

furnishing essentially nothing more than theories of truth, and *vis-a-vis* 'analytical ontology', furnishing theories of truth-makers. The relationship of contemporary (analytical) ontology and metaphysics is, then, briefly this. One cannot do metaphysics without doing ontology; for in order to define the notion of truth, one needs to specify what makes a sentence true. But since 'true' and 'true-in-L' may be left uninterpreted when describing the structure of entities that (L-speakers can take to) make certain L-sentences true, ontological research can remain metaphysically neutral.[5]

2. Ontology and Semantics

The internal diversification of traditional metaphysics effected in 20th century analytical philosophy, i.e., the differentiation into 'analytical metaphysics' *alias* the theory of truth, and 'analytical ontology' *alias* the theory of truth-makers, is sufficiently documented in the journal literature to 'see at a glance' that ontology is separable from, indeed independent of, metaphysical considerations. Matters are rather more complicated, however, when we try to contrast ontology with semantics. And yet, as I try to show in this section, the characteristic traits of an ontological theory of truth-makers are best set out on the foil of a comparison between ontology and semantics. Let us have a brief look at the data, tasks, and scope of both disciplines, in the hope that even the cursory comparison I can offer here will contain the relevant pointers.

2.1 The Data of Ontology

Both semantical and ontological theories can be viewed as model theories of sorts, even if some semantical theories and many ontological theories do not explicitly present themselves in this theoretical form. In its perspicuous methodological form an ontological theory has the form of the quadruple $<M, T_M, f, L>$: it specifies an assignment f which correlates the elements of a class *L* of

[5] This is certainly one of the more controversial elements of my reconstruction. It implies that the current fashion to stress the importance of „realist ontologies" or „ontological realism" involves strictly speaking a misnomer; a realist ontology simply combines an ontological and a metaphysical project, and consists of a structural description of truth-makers together with the metaphysical valuation that presents these truth-makers as real entities. My claim that ontology, in its current manifestation in analytical philosophy, is concerned with truth-makers independently of their metaphysical valuation can be well supported by a brief look at the main track of the development of analytical ontology from Carnap's constitution theory and metalinguistic deflationism to Quine's, Sellars', and Goodman's investigations of ontological commitment to the current debate about individuation, persistence, material constitution or modality; cf. Seibt (1996a), (1996b), (2000). Proponents of „realist ontologies" so-called will point at the alternative line of tradition that leads from Brentano, the early Husserl, and Russell to Bergmann or the Australian 'school'.

L-sentences with structures of the domain of interpretation M as described by a domain theory T_M . For example, when ontologists present arguments for claims like 'individuals are to be analyzed as bundles of properties' or 'objects are occurrents rather than continuants' or 'complexes differ from state of affairs' etc., they argue in essence for certain – "revisionary" – specifications of the interpretation function f which 'translates' a certain class of L-sentences (i.e., L-sentences that according to some alternative theory about domain M are about individuals, persistent objects, or complexes and state of affairs) into sentences of the theory T_M.[6] Below (cf. section 2.3) I will have more to say about the scope of the variable 'L', denoting the 'source language' of an ontology; for the time being it may suffice to read it as a stand-in for a natural language but to keep in mind that 'L' can be taken to range over (groups of) natural languages and (groups of) scientific languages.

Semantic theories are theories of the meaning and reference of the expressions of one specific language (semantic description of L) or a group of languages *L* (general semantics). Depending on the focus of analysis, one commonly distinguishes in semantics the subdisciplines of (i) lexical semantics, which investigates the meaning of L-words and lexical relations among them, (ii) sentence semantics, which identifies the structure of L-sentences or *L*-sentences, and (iii) semantic theories of inference, which analyze various types of inferential relations among L-sentences or *L*-sentences. At first blush it may be tempting to put ontology in the proximity of sentence semantics – after all, is not the analysis of predication traditionally one of the primary concerns of ontology? Then again it might seem as though ontology is most closely related to lexical semantics – after all, do not ontologists proclaim to somehow analyze or determine what we mean by 'person' or 'event' and similar most general nouns? However, upon closer consideration it turns out that ontological theories are best understood as *cognates of semantic theories of inference*. To argue for this classification I will briefly address the suggested alternatives, beginning with two observations on the relationship between sentence semantics and the ontological theory of predication.

Sentence semantics treats the meaning of sentences, reconstructing structural components such as tense, aspect, thematic roles ('agent' -'patient' - 'instrument' etc.), and voice ('active' – 'passive', etc.). Ontology appears to be engaged in a related project. An ontology is a theory of the structure of truth-makers and traditionally ontologists have focused on devising structures for the truth-makers

[6] Like a semantics an ontological theory may use a formal language to state T_M , but more frequently ontologists use for this purpose the vocabulary of L itself. This does not create any vicious circularities since the theory T_M implicitly defines the L-terms it uses to analyze the truth-makers of L (i.e., L-sentences as they are interpreted by the common inferential practices of L-speakers). If one does not pay sufficient attention to this point, confusion ensues (cf. for instance the common charge that „revisionary ontologies" illicitly exploit the semantics of the idiom they are trying to'reduce').

of what are syntactically the most simple L-sentences, such as 'Max is beautiful' or 'Mary loves Max'. From its ancient beginnings to the present day ontology has given the 'problem of predication' a central place. Given an analysis of simple (logically 'atomic') L-sentences into the components of 'subject' or 'singular term(s)' and 'predicate', the main business of ontology appears to be to assign to these components certain types of structures of M and to describe how they combine to form truth-makers of the sentences so analyzed. Much of the longstanding concentration on predication can be traced back to the equally longstanding prejudice that the 'world' (M) consists of substances, the denotations of the 'subjects' ('singular terms') of a sentence, which naturally engenders the question about the status and functioning of the denotations of predicates. What matters for our purposes here, however, is, first, that the ontological theory of predication operates with a sentential component analysis that it takes over from classical or contemporary logic, respectively – ontology traditionally devises the denotation types for the subsentential types of logical 'syntax', i.e., the 'logical categories'. It is important to keep in mind, however, that logical categories are introduced in order to account for certain inferential patterns of L-sentences, such as the existential generalization from 'Max is beautiful' to 'Someone is beautiful'. Thus, if ontological theories take the truth-makers of simple predicative or relational L-sentences to be complex structures, they specify the structural components of these truth-makers *according to the inferential roles of the sentences involved.* This, then, is our first observation: even insofar as an ontology devises denotation types for subsentential units, in doing so it is ultimately guided by the inferential roles of whole sentences.

The second observation takes off right from here. The various logical functions associated with traditional logical categories (e.g., the referential function associated with the subject and the predicative function of the predicate) can be defined *entirely in terms of inferential patterns* involving whole sentences, i.e., without postulating subsentential units (e.g., subject and predicate).[7] Thus ontology does not need to assign denotations to subsentential L-expressions. This claim can also be supported from a somewhat different angle. Lorenz Puntel has drawn attention to the fact that contemporary ontological theory construction is to the present day mainly guided by Frege's compositionality principle which states that the denotation of a sentence is a function of the denotations of its parts.[8] But as Puntel argues ontologists may as well take their bearings from („the strong holist version of") Frege's context principle which postulates that the sentence is the primary unit of meaning and *not the product,* functional or otherwise, of the meanings of its parts.

There are two ways in which one can build an ontology in accordance with the context principle. First, one may simply deny that the atomic sentences of the

[7] Cf. e.g. Brandom (1996).
[8] Cf. e.g. Puntel (1990) chap. 3.

typical ontological source languages such as English have any internal semantic structure and need a structured complex as truth-maker. This is the general strategy pursued by contemporary nominalists; if it ever has been implemented convincingly then perhaps in Wilfrid Sellars' 'dispensability theory of predication'.[9] This strategy, however, encounters a basic quandary. The logical categories of 'subject' or 'singular term' and 'predicate' are disregarded at the level of ontological interpretation: atomic sentences have unstructured truth-makers. However, these logical categories mark inferentially relevant functions that somehow have to be anchored in the truth-makers of atomic sentences.[10] This dilemma does not arise for the second way in which the context principle can be implemented ontologically. Here natural language sentences like 'Max is beautiful' are declared to be only apparently 'atomic'. Puntel, who takes this second route, claims that only the so-called "subjectless" (Broad) or "feature-placing" (Strawson) or "primary" (Puntel) sentences like 'it is raining' or 'it's water' are properly atomic, and that such primary sentences denote unstructured truth-makers called „primary states of affairs" or „Verhalte". What is traditionally regarded as an atomic sentence, e.g., 'Max is beautiful', is a logical complex, expressing a containment relation between the "configuration" of primary states of affairs denoted by 'It's being-Max' and the (possibly complex) primary state of affairs denoted by 'It's being beautiful'. In this way the logical functions performed by certain parts of natural language sentences like 'Max is beautiful' can be accommodated without giving the logical categories of singular term and predicate any ontological interpretation, in particular, without countenancing two different structural components of truth-makers.

To summarize our two observations, even though ontology has factually for a long time followed the composition principle and has offered ontological interpretations for subsentential expressions, (a) in doing so it is guided by the inferential role of the sentences it analyzes, and (b) there is no systematic necessity to do so – there is no need to divide the truth-maker of a sentence into a 'this-factor' and a 'such-factor'.

Lexical semantics is the study of word meaning which includes the investigation of vagueness, ambiguity, and lexical relations, such as synonymy, antonymy, meronymy (part-whole), etc. Lexical semanticists also investigate the relation of hyponymy (inclusion), on the basis of which we infer, e.g., from the sentence 'Mary waved to her mother' that Mary waved to a woman. This seems to put at least part of lexical semantics into the close vicinity of ontological research. Let us call the most general nouns of L the 'ultimate genera' of L. Ontologists claim, for instance, that a person and a plant are both substances, or that the human mind and a plant are both monads, or that a stone is a – rather

[9] Cf. Seibt (1990a) chap. 6.

[10] Struggling with this dilemma Sellars seems at first blush seems to smuggle in properties at the backdoor when he says that the truth-makers of atomic sentences are „so and so characterized objects", cf. Seibt (1990a) and (2000b).

monotonous – process. At first blush it might seem that such ontological claims serve to analyze or create hyponymy relations, using existing and newly devised ultimate genera as hypernyms, As shall become clear in the following section 2.2, such a view of ontology as the study of classificatory relations between selected lexical items would coarsely misrepresent the actual tasks of the discipline. Ontology goes far beyond clarifying and stipulating relationships between linguistic expressions belonging to the source language. Rather, it aspires to describe 'what there is' in the sense of providing a description of truth-makers of the source language, i.e., of extra-linguistic items as described by T_M.

But ontology certainly does take relations between linguistic items into account. Whether an ontological account of a thing or property or event or person etc. is adequate depends on what we can infer from it (according to T_M) in actual or possible circumstances. Let us look at some examples. The so-called bundle theory of the individuation and numerical identity of things has been rejected on the grounds that it would force us in certain conceivable circumstances to conclude that the names 'A' and 'B' refer to just one individual, even though the denotations of 'A' and 'B' are spatially separated,. Frequently this objection is presented as a conflict between the bundle theory and our 'intuitive' way of counting things. But the common appeal to 'intuitions' is nothing else than the demand that an ontological account of the denotation of L-term 'K' should accommodate the inferences one can draw in L from the L-sentence 'x is a K'. In our example, the charge is that the bundle theory cannot capture the inference: 'if A is spatially separated from B, then A and B are not numerically one thing'. Sometimes ontologists complain quite explicitly about the 'inferential deficit' of a suggested analysis; in the recent debate about universals, for instance, platonists contend that nominalists, those who claim that sentences about properties are made true by concrete objects only, cannot capture the inferential space of abstract classifications such as 'redness is a color'. Mostly, however, the objection takes the form of a thought experiment whose special circumstance reveal the relevant shortcoming with regard to the inferential space of the analyzed L-term. If a certain account of personal identity is tested in the Hollywood world of malfunctioning teletransportation, then this has no other purpose than to highlight that the account cannot accommodate the inferential space of 'person' as licensed by L (such as if x is a person, x has at any time of its existence a unique location; if x is a person, the survival of x cannot be a matter of degree etc.).

Since entailments play such a pivotal role in ontological debate, I suggest that ontology is best compared with semantic theories of inference. We can sort inferential patterns into formal, material, and conversational inferences.[11] A

[11] Here are some examples. The familiar logical constants 'and', 'not', 'all' etc. engender formal inferences; the much larger group of material inferences involves descriptive constants (such as 'this is green – thus it is extended'); conversational inferences are those based on illocutionary roles (such as: 'the judge declared them to be husband and wife at

semantic theory ultimately aspires to offer a theory of meaning in terms of which all types of inferences licensed by L can be reconstructed, from formal inferences to conversational implicatures to lexical presuppositions. An ontology, on the other hand, treats a subset of material inferences C_L that are engendered by ultimate genera of L like 'thing', 'event', 'person', 'act', 'relation', etc. Compare for instance the inference patterns in the sentences [1] through [3], where [1] entails [2] but not [3], [4] entails [5], but [6] does not entail [7]:

[1] Tom's (only) car is white.
[1] => [2] Whatever is to the left of Tom's car is not Tom's car
[1] ≠> [3] Whatever is to the left of Tom's car is not white.
[4] Kim saw the explosion that destroyed her car today at 7am.
[4] => [5] Kim saw something today at 7am.
[6] Kim saw the man that destroyed her car today at 7am.
[6] ≠> [7] Kim saw something today at 7am.

Patterns like these are 'genus-constant', i.e., they hold for more or less specific nouns in the same genus. We may, for instance, replace 'car', 'explosion', and 'man' with their respective specifications ('Ford', 'gas explosion', 'male punk') or with their respective generalizations ('vehicle', 'blast', 'resident'). This means we can also use such inferential patterns to construct a group of nouns related by the genus-species relation in the form of a tree. A genera group characterized by a certain set of inferential patterns is commonly identified in terms of the tree's uppermost nodes, here: 'thing', 'event', 'person'. Such uppermost nodes of a genus tree I call the ultimate genera of L and the inferential patterns that characterize the pertinent genus I call 'categorial inferences'.

The lead question of this section can be rather quickly answered now. The data of an ontological theory are the categorial inferences licensed by L. These are the 'phenomena' that ontologists try to 'save' or explain by devising a description of truth-makers for the sentences involved in them. An ontological account of personhood, individuality, or of properties, respectively, describes the domain entities that sentences about persons, individuals, or properties, respectively, can be taken to be about, in such a way that the 'phenomena', the inferences that are typically engendered by such sentences, can be derived, via T_M, from the structures of the associated truth-makers.

2.2 Tasks and Goals of an Ontology

An ontology, this is the suggestion of section 2.1, shares its data-structure with semantics and logic and may even share its data with a semantics, in so far as the

noon – thus they were husband and wife from then on') but also conversational implicatures based on violations of the Gricean maxims (such as: 'His qualifications as a mathematician? Well, his handwriting is excellent'.). It does not concern us here that the boundaries between these groups may be fuzzy, that there may be good reasons to reduce or enlarge the number of types of inference etc.

latter treats categorial inferences. Also the tasks of a semantic theory of inference and an ontology are quite similar. An ontology is a theory which assigns to certain L-sentences certain structures of the domain M in order to describe the categorial inferences involving these sentences or their components *in terms of structural relationships* holding among the elements of M. An ontological theory thus follows (however implicitly) the general approach of a model-theoretic explanation of inference, where inferences in L are 'played back' to relationships among model-theoretic structures. Model-theoretic semantics relies typically on a function-argument architecture to articulate the relevant relationships among model-theoretic structures; ontological theories, on the other hand, typically operate with containment relationships, i.e., set-theory, mereology, lattice-theory, but also informal relations such as 'x is constituent of a bundle y', or 'x exemplifies y', etc.

But even though an ontology and a semantic theory of inference pursue in essence the same task to account for 'inferential phenomena' (in L) in terms of structural relationships among denotations of L-expressions, there are crucial differences with respect to the overall goals of the two disciplines. A semantic theory of inference pursues the goal to cover as many types as inferences as possible, from formal to material to conversational inferences. To reach this aim semanticists do not shy away from descriptions of M that are type-theoretically and algebraically complex. Semantic model structures are populated by any entity – any array of functions from and into (functions from and into) possible worlds, attributes, (lattices of) individuals, space-time points, etc. – that might be useful to model the given set of inferences. In comparison to such constructional license ontology appears rather frugal. An ontologist is content to treat a relatively small set of material inferences (categorial inferences) with the general objective to offer a domain description that is as *simple* as possible, in the sense that (i) it uses as few basic types of entities (including relations) and (ii) operates with entities that are 'as familiar' to L-speakers as possible, i.e., in particular with relations that are as 'concrete' or algebraically simple as possible. Each of the two postulates documents the *characteristic explanatory character of ontological domain descriptions*.

This is not difficult to see. The first postulate is nothing else than the often-used methodological principle known as 'Occam's razor' – the fewer types of basic entities in M the greater the explanatory power of T_M. The second postulate obviously guards against explaining *obscurum per obscurius* – a description of truth-makers T_M can be said to *explain* certain L-inferences only if the entities postulated by T_M are in some fashion familiar to L-speakers. Let us have a somewhat closer look at the notion of 'familiarity' that is issue here.

The history of ontology, from its beginning to the present day, displays a substance-ontological bias; while substances are ultimately incoherent entities,[12]

[12] For a comprehensive argument to this effect cf. Seibt (1990b).

ontologists found and find themselves attracted to substances as basic domain entities since substances resemble so much the things of our everyday world. It is important to realize that the bias in favour of substance-ontology, wherever it is not a matter of unreflected conservativism, can initially derive some support from the second postulate. Substances are (components of) truth-makers that L-speakers can easily relate to, for even if they are not quite like things, they can be conceived on the model of a thing – as „starre Wirklichkeitsklötzchen"[13] that have properties and stand in relations. The postulate that truth-makers must be familiar to L-speakers thus can be rephrased as the requirement that each type of basic entity in M must have a 'model' in the sense in which the theoretical entities of science have observable models (e.g., electrons 'orbiting' the nucleus). Ontological models are fairly concrete entities which L-speakers typically know very well from their agentive experience; unlike models in science, the model for an ontological entity may also be one of its prime examples. Thus a block, a color, human experience, an electro-magnetic wave have been used as models for the 'theoretical entities' of ontology: substance, Platonic form, Whiteheadian "occasion", and "absolute process", respectively.[14] In general – some further clues concerning the relationship between ontological categories and their models I will give below – the model of an entity defined by T_M is the denotation of a term in L that stands in the specification relation (e.g., 'is a') with one of the ultimate genera of L (e.g., 'block' and 'thing').

In analogy to theoretical explanation in science, the explanatory power of an ontological theory derives to a considerable extent from the model(s) for the theoretical entities defined by T_M.[15] Thus, while substances are certainly not the only type of basic entity that has a model and the bias is as such quite unjustified, proponents of alternative ontologies must certainly acknowledge the need for a model. One of the disadvantages of trope-theories, for instance, appears to be that tropes, however well-defined axiomatically in some trope-based T_M, do not seem to have a good model relative to a natural language like English and its cognates – there is, it appears, no category term for property instances in these languages, nor a genus of property instances, nor a more concrete type of property instance that speakers of these languages could be familiar with.

I call postulate (ii) above the principle of foundedness.[16] As just sketched the postulate amounts to the demand that the basic concepts of T_M must in some

[13] Cf. Paulsen (1929), pp. 385, 392.

[14] It is quite instructive to reconstruct the historical development of the notion of substance itself in connection with the corresponding change in the notion's models: organism, hunk of matter, center of human conscious experience etc.

[15] Since T_M describes the denotations of the ultimate genera of L, it also determines the ontological classification of its model(s). Ontological explanations, like model-based explanations in science, can thus be seen to involve limited productive circularity.

[16] With this label I consciously allude to Carnap's postulate of „Fundiertheit" in §153-157 of the *Aufbau*. Carnap's surprising demand that the basic relation of a constitution system should be „natural" or founded in experience. This requirement has puzzled Carnap's commentators, since it apparently presents a lapse into a realist position, seems to be in conflict with Carnap's commitments to metaphysical neutrality and to a structuralist semantics. In my view, however, the postulate simply documents Carnap's sense for the explanatory goals of ontological research as it has historically developed. Recent proposals that dismiss the postulate of 'Fundiertheit and actualize Carnap's constitution theory as a general theory of structural representation, allowing for domain descriptions of arbitrary mathematical complexity and abstractness, thus do not contribute to the business of ontology as explanatory theory – as the early Carnap pursued it, even though he avoided the label. Cf. Seibt (2000a).

fashion be founded in the agentive experience of L-speakers; only on the basis of such a foundation in what is commonly called the 'intuitive understanding' of L-speakers can the domain description offered by T_M have any explanatory force. The foundedness requirement pertains not only to the basic domain entities but also to the relationships among them, i.e., to the basic connectives of T_M. This is well-documented in the standard gambit of proponents of mereology who – besides drawing on Goodman's objections against set-theory – commonly simply point to the fact that the part-whole relation is pervasive and quite familiar. By definition, so goes the argument, we do not interact with the sets of (axiomatic) set-theory but deal at best with concrete collections; the parts and wholes as defined by mereology are concrete and thus arguably accessible in agentive experience.[17]

The principle of foundedness thus marks the crucial difference between ontology and semantics, which concerns not the data (as we saw above) nor the scope (as we will see below) but the respective tasks and goals of the two disciplines. Both ontologies and semantic theories of inference yield structural descriptions of the referential domains of certain sentence classes of L. But while semantic theories may resort to arbitrary structures and thus may remain purely descriptive theories, ontologies operate under the restriction that the basic descriptive concepts must be founded in the agentive experience of L-speakers. Ontologies are thus at bottom explanatory theories. Of course, much more would need to be said about precisely how such 'foundedness' is to be spelled out. In particular, much more would need to be said about the relationship between language and 'agentive experience' and why foundedness does not imply a commitment to a foundationalist epistemology. My suggestion here, to draw the analogy to the role of models in scientific explanation, is merely a tentative first approach. We should note, however, that the principle of foundedness, in whatever way it will be cashed out ultimately, not only documents the explanatory character of ontology. It also generates an 'interface' between ontology and ethics in the broader sense of the term. The way we see our world determines which possible actions we can conceive of at any decision point; for

[17] I use the term 'mereology' here as a collective for the various mereological systems. I do not want to suggest , however, that each of them is equally well suited to capture one of the many intuitive part-whole relations.

example, whether we perceive peace as a state or as a process can crucially determine the welfare of two peoples.

2.3. The scope of ontology

There are semantic theories, e.g., theories of Aktionsarten, that are drafted as "general semantics" or semantic components of „universal" grammars applying to a group of languages. Other treatments of semantic phenomena are focused on one specific language, e.g., the semantic description of the functions of the conjunctions 'und' and 'aber' in German. In contrast, a theory of truth-makers developed for categorial inferences formulated in the source language English or German etc. is never explicitly intended to apply to the source language only. No ontology is explicitly advertised as the ontology of English or the ontology of German, as little as logics developed in English or German are logics of English or German. Formal inferences, logicians trust, are strictly or at least largely universal patterns of reasoning, and ontologists typically assume the same for categorial inferences.

Even though it seems clear that theories of categorial inferences apply to more than a single language, it also seems obvious that they remain language-dependent in some fashion. A theory of truth-makers for categorial inferences involving, say, the notion of a 'thing' as licensed by English does not apply to languages in which there is no or no sufficiently direct (i.e., non-paraphrastic) translation of the notion of a 'thing' and the categorial inferences it engenders.[18] Of course, one might object that speakers of such languages nevertheless endorse inference patterns paraphrasing the relevant English data. To what extent sentences of other languages can qualify as paraphrases of English sentences in the relevant context, must be decided primarily on the basis of empirical studies in linguistic typology – it certainly cannot be investigated by armchair methods alone.[19]

The synchronic scope of an ontological theory thus is rather difficult to determine. Matters are not much easier when we consider the diachronic scope. A semantic description of German is, either explicitly or implicitly, temporally indexed as applying to the language as manifested at a certain time or period. Ontologists, in contrast, typically do not indicate any restrictions on the temporal scope of their theories (e.g., 'the ontology of English in the second half of the 20th century' etc.). Categorial inferences are commonly considered to belong to a

[18] Cf. for instance the huge group of classifier languages. In fact, from a glance at the minor typological significance of the Indo-European languages it could appear that the traditional ontological concerns, centering on the individuation, persistence, material composition of things and the status of attributes, articulate the categorial concerns of a quite parochial language group.

[19] In particular, it is of little use merely to rehearse Quine's slogan „ontology recapitulates philology" since Quine's supporting arguments rest on questionable semantic premises.

part of the inferential system licensed by L that remains comparatively stable over time. However, impressed by the two conceptual revolutions in contemporary physics, ontologists increasingly acknowledge that categorial inferences can ultimately be affected by the development of science. The inference pattern

[8] □ is a material part of a car
[8] => [9] □ has fully determinate properties

will vanish inasmuch as L-speakers extend their understanding of the material constitution of things to the domain of quantum physics.

Altogether, then, we are facing the problem of how to state the scope of an ontological theory in a sufficiently precise yet general fashion – allowing for synchronic variability relative to the results of typological research as well as for diachronic dynamics in categorial inference. This problem can be resolved rather elegantly, I believe, within a Sellarsian role-semantic framework.[20] Role-semantics (functionalist semantics) postulates that the meaning or conceptual content of an L-term consists in its linguistic function, i.e., its function in observation and action contexts and its inferential role (as defined by the list of L-licensed inferential patterns in which it occurs). A language, scientific or natural, thus may be considered the embodiment of system of functions or roles or meanings or concepts. Translations between different languages are from the role-semantic view *language-dependent or perspectival* assessments of similarity in function – the judgments

[10] 'red' bedeutet soviel wie *rot*
[11] 'he didn't make it' bedeutet hier so viel wie *er hat es nicht geschafft*

state that tokens of 'red' or 'he didn't make it' function in English in a very similar way in which tokens of 'rot' or 'er hat es nicht geschafft' function in German.[21] There are two ways to state the linguistic role of an L-expression E. One may either explicitly list all the L-rules for the correct usage of E. Commonly, however, as in [10] and [11], the role of E can be referred to by means of an illustration – we may quote E in order to rehearse its use or function (while abstracting from the particular graphical or phonetic shape of the expression). This peculiar type of quotation, which Sellars marks by "dot-quotes" (·rot·), can be applied to subsentential L-expressions, but also to sentences, discourse parts, or whole languages.

Within the role-semantic setting the expression '·thing'· is the name of the linguistic function of 'thing' in English that an English speaker (with proper knowledge of the pertinent foreign languages) may find to be performed, at least partially, by 'Ding' in German or 'res' in Latin or 'chose' in French etc. The ontological analysis of the ultimate genus 'thing' in English, i.e., the explanation

[20] For an introductory exposition cf. Seibt (1990a) section 2.3 and chap. 3.

[21] Role-semantics thus effectively undercuts Quine's argument for the indeterminacy of translation, cf. Seibt (1990a), section 2.4.

of the categorial inferences engendered by 'thing' as licenced in English, thus can be seen to pertain not only to English but also to all languages which embody the same (or a very similar) role as that of 'thing' in English. Similarly, the ontological analysis of the ultimate genus 'thing' in English pertains to the role embodied by 'thing' in English in 1999 and all historical manifestations of the word that embody the same (or a very similar) role.[22]

In order to indicate that the scope of an ontology synchronically and diachronically goes beyond the source language L, we thus can simply make use of the role-semantic notion of a conceptual scheme as dot-quoted language. Thus we can improve on our initial schematic characterization of ontology as follows:

(ONT) An ontology is the quadruple <M, T_M, f, ·L·>.

Even though an ontology is always developed relative to the source language L, as a theory of categorial inferences it operates with (a certain part of) the system of linguistic roles (meanings, concepts) embodied by L and thus pertains to all cotemporaneous and historical languages that embody the same or similar roles. Let me emphasize, however, that the role-semantic commitments that enter into the formulation of (ONT) are a matter of expository convenience *only*; the general view of ontology as a theory of categorial inference does not depend on it.

3. Ontological Categories

From Aristotle onwards, throughout the tradition of ontology, the term 'category' is fraught with a fundamental semantic ambiguity. On the one hand it is used to denote most general concepts, on the other hand, most basic entities, or ways of being, or aspects of Being etc. Our definition of ontology (ONT) above allows us to accommodate either one of the two conceptions of categories. We may say that ontological categories are the basic entities in the domain M as described by T_M, or that they are the basic terms of the domain theory T_M. Since it is for our purposes not necessary to decide for either the 'entitative' or the 'conceptual' reading of the term 'category', I will in the following avail myself of both.

It is important, however, to distinguish carefully between what I above called 'ultimate genera' and categories. Ultimate genera are terms of the source language ·L·; categories are (in the conceptual reading) the basic terms of T_M. Whether in the entitative or the conceptual reading, ontological categories are always theoretical items and it is quite misleading, I think, to speak of the 'categories' of a natural or scientific language. The source language contains terms that *allow for* an ontological interpretation. The most general nouns of ·L·,

[22] In order to define more precisely when two expressions E_1 and E_2 have the same role (or very similar roles) we can quantify over the number of shared rules, e.g., if they share 95% or 90% of their rules etc.; such decisions about the identity of meanings or concepts are to be made primarily on an empirical basis.

such as 'thing', event', 'state of affairs', 'process', 'interaction', 'cause', etc., point at crucial divisions in the world of ·L·-speakers. But they themselves do not denote these divisions; rather, as I have suggested above, they label the data of an ontology, namely, the inferential phenomena to be explained in terms of types and relationships of the structural description provided by T_M.

An analogy might be helpful here. The inhabitants of a village may know their way around without ever having to consult a map of the village. They know that if they are at the baker's shop, they need to turn left to go to the butcher, and if they are at the butcher's shop they can turn right to get to the church, or left to reach the Mayor's House etc. The villagers may develop ultimate genera like 'crossing', branch', 'corner', 'turn', 'dead end' and so on to generalize their spatial inferences ('when you are at the Miller's house, you may continue in four different directions' – 'when you are at a crossing, you may continue in four different directions' etc.). Some day the county's cartographer is sent to the village to draw a map. Her basic notions, e.g., points, distances, contour lines, can be used to *explain* why the villagers are entitled to draw the spatial inferences that are endorsed by the system of their spatial ultimate genera.

Ultimate genera and categories should in turn be distinguished from what I call 'category descriptors', i.e., predicates of T_M, that are used to characterize the entities stipulated by T_M.. Consider again the inferential pattern in sentence [1] through [3] above:

[1] Tom's (only) car is white.
[1] => [2] Whatever is to the left of Tom's car is not Tom's car
[1] ≠> [3] Whatever is to the left of Tom's car is not white.

In order to explain this pattern an ontologist may stipulate in her T_M that the truth-maker of [1] contains a substance and an attribute. Since, according to her T_M, substances are introduced as particular entities and since something is a particular entity if and only if it occurs at any point in time in one location only, the inference to [2] has found an explanation of sorts. Similarly, that [1] does not entail [3] is explained by the fact that attributes are classified by T_M as general entities, i.e., as entities with possibly multiple occurrence. I do not want to suggest here that such explanations, which are typical for the ontological tradition, have satisfactory depth; as soon as one articulates T_M as a formal theory, ontological explanations can, as they should, go far beyond such simple classifications. What I want to highlight here is that the category descriptors and their definitions frequently carry much of the force of an ontological explanation. Category features like particularity, concreteness, unification, countability, persistence, uniqueness, discreteness, dynamicity etc. may apply to more than one category, some categories have fewer features than others, but no two different categories may have the same category features. Here are some common characterizations of categories in terms of feature lists:

x is a trope: x is abstract, particular, non-persistent...
x is an occasion: x is concrete, particular, non-persistent...
x is an attribute: x is abstract, general, persistent, non-dynamic...
x is an event: x is abstract, general, persistent, dynamic...

Aristotle famously experimented with the category 'substance' which he characterized in the following terms.

x is a substance: = x is persistent, the locus of change, countable or one of its kind, particular, non-instantiable, independent, discrete, simple, unified.[23]

If the distinction among ultimate genera, categorial inferences, categories, and category features are not properly observed, confusion ensues. For instance, in the so-called 'debate about persistence' the question is how to explain inference patterns like the ones involved in the entailment of [13] and [14] by [12]:

[12] The tower has changed much since I last saw it.
[12] => [13] The tower I am seeing now and the tower I saw some time ago are the same thing.
[12] => [14] The tower can be reidentified.

The current debate essentially considers two solutions only, namely, the so-called 'endurance approach' which justifies these inferences in terms of truth-makers that contain persistent entities such as substances, and the so-called 'perdurance approach' that operates with relational structures of non-persisting entities.[24] Some philosophers misunderstand the debate to be about whether or not we should change our common ways of talking about things; in particular, the perdurance approach is sometimes mistaken as the suggestion that we should 'treat things as events', i.e., that we should blur the inferential role of the ultimate genera 'thing' and 'event'.

> What I cycle to work on every day is the bicycle, not a [temporal] part of it; the bicycle, not a slice of a bicycle-worm, leaves tracks in the muddy path. It is the bicycle which costs so-and-so many pounds, not a temporal slice of it; and what badly needs a clean is not today's space-time segment, for that will not take polish.[25]

But the actual question is of course (a) whether perduring rather than enduring entities should be postulated in order to fit the *existing* inferential role of 'thing', and (b), how we are to understand the category features (T_M terms) 'enduring' and 'perduring', i.e., the way in which substances and relational structures of point-events exist in time. The 'problem of persistence' thus is not to confirm or change the source language but to offer satisfying definitions of the *theoretical expressions* (categories and category features) used to describe the truth-makers for the source language.

[23] Cf. Aristoteles, *Metaphysics* 1042a34, *Physics* 200b33, *Metaphysics* 1038b35f, *Metaphysics* 1017b16ff, *Categories* 2a13ff, *Metaphysics* 1037b1ff, *Categories* 3b33, *Metaphysics* 1041a4f, and ibd. b11ff, respectively.
[24] The terminology goes back to Mark Johnston, cf. Johnston (1984).
[25] Hacker (1982), p. 6.

It should be clear from what has been said so far that the ultimate genera of a language *as such* do not determine which ontological categories should be used to explain the categorial inference patterns in ·L·. Ontology does not recapitulate philology, at least not in the crude sense that would have us read off ontological categories from the list of ultimate genera in the source language. But then of course the question arises how else one could or should arrive at the basic explanatory concepts of one's ontological theory.

3.1 Category construction

Ontologists have followed a variety of heuristic strategies to draft ontological categories. There is, for instance, Aristotle's method to work from a classification of L-assertions into ten groups with common 'focus', which he then proceeds to identify as the ten general aspects of an entity or ways of being. There is Kant's method to map the logical division of forms of judgment into the set of most basic explanatory concepts or 'structures of possible experience'. There is Heidegger's method to reveal the basic ways of being by means of a phenomenological analysis of the human condition. There is Puntel's method to use a semantic principle (the context principle) as a guideline for the construction of truth-makers.[26] There is Broad's method, adopted by Sellars, to derive a new type of entity ("subjectless processes") from the existence of a certain type of sentence ("subjectless sentences" like 'it's snowing').[27]

I shall suggest here yet another method. Ontological debate itself provides us with useful heurism for the construction of categories. In analogy to concept induction in learning theory I call this method 'category induction' (to be

[26] Puntel presents the ontology of Verhalte as a strict systematic consequence arising from the adoption of the context principle, cf. e.g. (1990), section 3.3, (1993), (1997), (2000). Puntel's conception, uniting a theory of truth, an ontology, and a semantics, certainly displays impressive systematic fit. One should note, however, that the ontology of Verhalte does not, in turn, necessitate a commitment to the context principle. Compare Puntel's analysis of predication for natural language sentences that are commonly considered atomic, such as 'Socrates is a philosopher': „There is an x such that x is ('is' in the sense of: 'is to be conceived of semantically and ontologically as') the configuration S of primary states of affairs p_1, p_2, ...p_r and there is a primary states of affairs p_i such that p_i is the primary state of affairs expressed by the primary sentence 'it's philosophizing' and p_i is a component constituent of S"; cf. Puntel (2000), p. 14. It seems that this analysis of predication can consistently be combined with a compositional semantic analysis of common atomic sentences.
[27] This method should be understood as a heuristic strategy only, until some good reasons have been given for why we should not simply treat subjectless sentences as abbreviations of sorts. Sellars, for instance, simply claims that 'rain rained' counts as a plausible paraphrase of 'it is raining', but 'it is lightening' is not in this sense plausibly paraphrased by 'electrons jumped across the gap', without elaborating on the notion of a „plausible paraphrase". Cf. my (2000b).

distinguished from 'category projection', cf. below).[28] The method proceeds from two humble observations, namely, first, that over 2000 years of ontological research in Western philosophy have produced a relatively small set of different ontologies, and second, that none of the ontologies developed so far provides satisfactory solutions to (what are traditionally considered) the ontological core problems: the problem of individuation, of universals, of persistence. In combination these two observations suggest that ontological research, throughout its history to the present day, has been operating under implicit theoretical restrictions. These restrictions can be isolated if we analyze (a solid portion of) the contemporary debate about individuation, universals, and persistence for implicit assumptions that are presupposed by *both proponent and opponents of a certain ontological account.* I have identified over twenty of such presuppositions (without aiming for minimality), which in combination produce the research paradigm of the substance-ontological tradition. In analogy to the "myth of the ghost in the machine", the „myth of the given", the "myth of the museum", one could be tempted to speak of a 'myth of substance' being at work in ontology. Here are some examples of substance-ontological principles that amount to momentuous restrictions on the free construction of truth-makers, yet are still presupposed by the majority of ontologists to the present day.

(P-1) *Principle of Independence*: All and only concrete particulars are independent.

(P-2) *Principle of Individuality:* All and only independent concrete particulars are individuals.

(P-3) *Principle of singularity*: The ontological factor that individuates an entity also ensures the singularity of that entity. (Briefly: Individuals do not occur multiply).

(P-4) *Principle of subjecthood:* The properties that are truly attributed to an entity are attributed to the ontological factor that individuates the entity. (Briefly: Individuators are logical subjects).

(P-5) *Principle of categorial dualism*: Ontological structures consist of (simple and complex) particular entities or (simple and complex) universal entities or combinations of both.

As I have shown, these and similar principles not only restrict the theoretical options in ontology, they also hamper the development of convincing solutions to ontological core problems.[29]

The second step of the method of category induction is to take the negations of one or more of the identified presuppositions as new heuristic principles for the construction of truth-makers. One might, for instance, take the radical step of developing an ontological framework on the basis of a negation of *all* substance-ontological presuppositions. Whether such a radical step is indeed necessary,

[28] For a full-scale implementation of the method cf. my (1990b).
[29] Cf. Seibt (1990b).

remains to be seen – given the large number of substance-ontological presuppositions there is certainly much room to experiment with more conservative categorial schemes.

One of the possible results of the envisaged radical rejection of the substance paradigm is a monocategoreal scheme which I call "Dynamic Mass Theory" ('DMT'). Since the constructional heuristics for DMT is to undercut the substance-ontological paradigm as much as possible – certainly more comprehensively than any other of the extant 'revisionary' ontologies sufficiently developed – it boosts a variety of radically new solutions to the traditional ontological problems. DMT countenances as basic entities only "dynamic masses", entities that are modeled (in the sense referred to above and elucidated below) on subjectless activities like snowing or lightening. Dynamic masses are concrete non-particular dynamic individuals, and they relate to each other by means of other dynamic masses, called activities of „interference". What is commonly discussed under the labels 'emergence', 'supervenience', 'composition', etc. are in DMT different forms of interference with different additivity rules. Drawing on these we can define in DMT derived type of entities that fulfill the inferential role associated with the ultimate genera 'thing', 'property', 'relation', 'event', 'state', 'stuff', and (trivially) 'activity'.[30] To articulate these relationships DMT uses a formally defined, non-standard mereological notion of 'part'. Since dynamic masses are non-particular individuals and the difference between particularity and generality is not a categoreal division but merely a difference in degree of specificity, the traditional problems of universals and individuation have in DMT straightforward solutions.[31] Similarly, due to the constructional principles of DMT, we can in DMT offer a definition of persistence that combines the insights of the endurance and perdurance approach while avoiding their pitfalls.[32]

3.2 Recategorization

Due to the principle of parsimony governing all ontological theory construction, every ontology aims for what is commonly called 'ontological reduction'. The simplest case of ontological reduction is 'type-theoretic downsizing' or 'category elimination' of the following kind:

(D-1) Let c_1 and c_2 be categories of T_M, let 'T_M*' stand for a version of T_M which does not contain c_1 as a category. Entities of type c_1 have been 'reduced' to entities of type c_2 iff

[30] For a sketch of these 'categorizations' cf. Seibt (1995). In Seibt (2000d) I offer a precise definition of 'thing' in a semi-formal version of DMT.
[31] Cf. Seibt (1990b), chap. 5 and (1996a).
[32] Cf. Seibt (1996b).

(i) there is a predicate F of the form 'x is a structure S (i.e., a set, sum, 'bundle' etc.) of c_2 that fulfills condition P' and
(ii) T_M* together with the statement 'for all x, if Fx then x is a c_1' entails T_M (i.e., F has with respect to the categorial inferences of ·L· the same explanatory force as the predicate 'is a c_1' and both can be used to state the truth-makers for the same ·L· sentences).

I have chosen this somewhat cumbersome definition of category elimination in order to highlight that it presents a special case of theoretical reduction as classically conceived: together with postulates of definitional identity, the reducing theory entails the theory to be reduced. Certainly not all ontological reductions are category eliminations in this straightforward sense. In fact, appears that in ontology reductions are almost as rarely based on definitional identities as in science.[33] There is a more involved form of 'ontological reduction', better termed 'recategorization', which captures much better the actual procedure in current ontological debate. Recategorization as I will describe it here is closely related to the type of intertheoretic 'reduction' that can actually be found to obtain between scientific theories, namely, the practice of constructing an „analogue" or "image" of certain parts of the old theory within the new or reducing theory.[34] I will briefly state the general schema of recategorization and explicate it further by means of an illustration. A more precise determination of the schema's scope of applicability must here be left to the reader.

Let c_1 and c_2 be terms for categories ('trope', 'substance', 'monad', etc.) of T_M and T_M^*, respectively, (where T_M^* is again T_M minus c_1). Let $D_{c1} = \{d_1, d_2, ...d_n\}$ and $D_{c2} = \{d'_1, d'_2, ...d'_n\}$ be sets of categorial descriptors for c_1 and c_2, respectively (i.e., predicates for category features like 'particular', 'persistent', 'concrete', 'actual', 'something', 'entity' etc.). In general, D_{ci} is the descriptor set of c_i just in case the rule set R_{ci} which determines the meaning of c_i in T_M comprises rules of the following form: 'if x is a c_i then x is d_j', for every d_j in D_j.

Let m_1 and m_2 be two kind terms (e.g., 'thing', 'perception', 'activity' etc.) of ·L· which are governed by rule sets R_{m1} and R_{m2} containing inferential rules or patterns that T_M associates with descriptor sets D_{m1} and D_{m2}, respectively. For the sake of brevity we shall say that D_{m1} and D_{m2} are the set of categorial descriptors for m_1 and m_2, respectively.

(D-2) Entities of type m_1 provide a model for entities of type c_1 if and only if
(i) D_{c1} is a subset of D_{m1}
(ii) most but not all empirical predicates F_i which apply to all items of kind m_1 apply also to all items with descriptor set D_{c1}.

[33] For a comprehensive critical discussion of the classical view of reduction as identity postulates cf. Hooker (1981).
[34] Ibd.

Clause (ii) accounts for the fact that the models of categories are instances of highly general kinds. The model for substances are things, and most substances are, like things, entities that are material, colored, shaped, impenetrable, uniquely located, at rest or in motion etc.

(D-3) Category c_2 is a recategorization in T_M* of entities of category c_1 if and only if:
(i) the intersection of D_{c1} with D_{c2} is not empty
(ii) m_1 is a model of c_1 and m_2 is a model of c_2
(iii) most but not all empirical predicates F_j which apply to items of kind m_1 apply also to all items with descriptor set D_{m2}
(iv) the set of inferential patterns associated by T_M with D_{c1} is a subset of the inferential patterns associated by T_M^* with D_{c2}.

Let us say that c_2 is a *direct recategorization* of c_1 just in case the models $m_1 = m_2$, and otherwise an *indirect recategorization* of c_1. For both types of recategorization it holds that the intersection of D_{m1} with $D_{\mu 2}$ is not empty, i.e., the models of the old and of the new category share some of their descriptors. I call two concepts (or the types of entities to which these concepts apply, respectively) with overlapping descriptor sets *categorially cognate* concepts (or types of entities, resp.). Recategorization, of either the direct or indirect variety, involves thus not only categorially cognate categories but also categorially cognate models.

To understand more fully the schema of recategorization just stated, let us consider it in application to Sellars' discussion of various recategorizations of *„sensa"* or "sensible items", i.e., phenomenal 'qualia' such as redness, sweetness etc.[35] In his *Carus Lectures* Sellars traces the dialectics leading from a naïve ontic understanding of sensa to the classical epistemic or perceiver-dependent interpretation to a process-based interpretation that straddles the ontic-epistemic dichotomy. In this way the *Carus Lectures* provide us with two examples of recategorizations, which, as shall become apparent, illustrate each of the two varieties of recategorization.

In the "ur-theory" (T_{M1}) qualia-expressions are interpreted as denoting entities that belong to the category of an "expanse of perceptible stuff" that is modeled on the notion of a portion of physical stuff (e.g., a cup of water).
Thus I shall argue that the phenomena can be saved by supposing our basic concept pertaining to red to have the form of a mass term, the predicative concept *is red* having the form *is an expanse of red*...the latter should be reformulated as 'an expanse of red *stuff*, where 'stuff' carries with it implications concerning the causal role of determinate portions of stuff in the physical world [36]

[35] Cf. Sellars (1981).
[36] Ibd. § 46.

Like any portion of physical stuff, an expanse of perceptible stuff is actual, something, somehow, concrete, possibly composite, a component of a physical object, persistent, and causally efficacious; what distinguishes this ontic ur-concept of a "sensible item" from its model, however, is the fact that a portion of physical stuff is a particular, individuated in terms of its spatio-temporal location, while a sensible item like an expanse of pink-stuff or sweet-stuff is a non-particular entity, individuated in terms of its causal role and not bound by the requirement of unique spatio-temporal occurrence. This illustrates the first clause of (D-2) above. Further, as postulated in the second clause of (D-2), most empirical predicates applicable to any portion of physical stuff (like 'is extended', 'can be reencountered', 'is homoeomerous (likeparted)', etc.) apply also to expanses of perceptible stuff, while some do not (e.g., 'has a unique location').

This ontic "ur"-categorization of qualia has a variety of explanatory virtues. For instance, it can account for (those parts of the inferential role of 'red' or 'redness' which express) the fact that ·English·-speakers hold a physical object causally responsible for the occurrence of an observer's experience of that object, as well as the fact that sensory experience is normally taken to be "seamless" or categorially homogeneous, i.e., the fact that "the perceptual object is not a mixture in which *some* items are experienced in the mode of sensing and *others* in the mode of conceptualization".[37] But the account cannot explain the difference between veridical and ostensible experiences, between seeing and merely seeming to see of an object that it is red.

This explanatory shortcoming, so Sellars' reconstruction of the historical debate continues, calls for a recategorization of sensible items. As well-documented in the ontologies of Cartesian philosophies of mind, qualia are recategorized as "states of perceivers which satisfy an axiomatics of shape and color".[38] The revised domain theory T_{M2} specifies that states of perceivers are actual, something, somehow, concrete, possibly composite, non-particular, and causally efficacious; i.e., they share most of the descriptors of expanses of perceptible stuffs. They differ, however, from expanses of perceptible stuffs with respect to their manner of existence, namely, by being "in *some* way present to the perceiver *other than as thought of*"; further, while perceptible stuffs are components of physical objects, states of perceivers are not. Precisely this difference enables the new category to capture more inferential patterns than the old one – the descriptor set of the new category can be associated with the inferential patterns involving 'looks' talk, the distinction between veridical and ostensible perception. The descriptor sets of the old and the new category thus instantiate clauses (i) and (iv) of (D-3). Clauses (ii) and (iii) are here trivially fulfilled since the recategorization of perceptual stuffs as states of perceivers is

[37] Ibd. § 118.
[38] Ibd. § 94.

direct in the sense defined above—sensory states of perceivers are "'quasi-expanses of color stuff' or 'quasi-stuffs' for short", that is, they are still modeled on the notion of a portion of physical stuff. But the relationship between category and model is here much more noticeably one of „analogical concept formation," that is, fewer empirical predications can be applied to both items of the category and items of the model.[39]

If we switch our source language from ·English· to a more scientific idiom where 'perceivers' merely are treated as systems of 'elementary particles', new inferential patterns are instituted and the Cartesian recategorization of qualia in turn appears as explanatorily limited. Sellars rehearses in the *Carus Lectures* accordingly various attempts to accommodate qualia in the „Scientific Image". The process-ontological interpretation he finally endorses illustrates a certain version of *indirect* recategorization. In order to account for sensible items in the Scientific Image Sellars introduces a new category, whose model is no longer a portion of physical stuff but a process: an „absolute or subjectless" process, such as 'raining here-now', 'lightening here-now', or 'the C#-ing from over-there'. The old and the new model are categorially cognate, however. Like volumes of physical stuffs, absolute processes are actual, concrete entities which stand in causal relations, are components of physical objects, possibly composite, and persistent. Further, like volumes of physical stuffs, absolute processes are for Sellars particular entities, individuated in terms of their spatio-temporal location and causal character. Unlike physical stuffs, however, absolute processes, insofar as they are actual, enjoy a "pure or complete form of actuality" – for they are not composites of a logical subject *having* (exemplifying etc.) manifest and disposition properties but *are* the actualization of an "intrinsic character" or 'dynamic quality'.

Sellars gives us only a few hints of how to conceive of the new category of qualia in the Scientific Image that is modeled on absolute processes. He operates with a variation of the method of indirect recategorization that I call 'category projection'. Instead of introducing the new category axiomatically, implicitly defined by a new domain theory T_{M3}. Sellars is content to characterize the category in terms of analogical extensions of the features of the model. Unfortunately Sellars uses the term 'absolute process' for the model as well as the category projected from it, which is bound to create confusions. But it is clear that the text is driven by the contrast between the notion of a common absolute process and some analogical abstraction of it. The entities of the new category, 'absolute processes*' as I shall call them, share many descriptors with the common absolute processes that are their models. They are purely or completely actual entities in the sense of consisting entirely in the production of an intrinsic character, concrete in the sense of being causally related, occurrent in space and time, possibly complex, possibly itself a constituent of (the categorial

[39] Ibd. § 95.

transpositions of) physical objects. However, unlike their models they are not individuated by their spatio-temporal location, i.e., they are non-particular. Further, their dynamicity or "ongoingness" should no longer be conceived of in terms of motion or causal propagation, Sellars tells us. Rather, we are called upon to think their dynamicity as a "*continuous* coming to be and ceasing to be" which can be cognitively "responded to" in terms of spatio-temporal duration but which, as such, occurs outside of the spatio-temporal dimension. The explanatory gain of this second recategorization, as postulated in the sense of clause (iv) of (D-3), is twofold. First, the new account of 'sensa' as absolute processes* allows us to view perceivers as composites, as systems of processes. Second, processes allow for types of interaction and interpenetration in terms of which the inferential patterns that articulate the causal role of sensible items can be captured more adequately.[40]

4. Conclusion

Ontology is an explanatory theory. The ontology of a conceptual scheme ·L· is designed to explain to ·L·-speakers why they are entitled to draw the categorial inferences licensed by ·L·, in terms of a structural description of their world. ·L·-speakers can 'intuitively' relate to this description via the models of the categories involved. This explanatory goal does in no way burden us to adhere to the traditional "object-ontological dogma" (Puntel) or more comprehensively to the myth of substance, despite the conceptual primacy of things, the models of substances, in everyday life. It merely requires that we care for a proper 'foundation' of alternative ontologies in the agentive experience of ·L·-speakers by specifying appropriate models for ontological basic entities. Proper appreciation of the explanatory tasks of ontology also offers a better view on the various projects of 'ontological reduction' so-called. In ontology as in science, reduction by definitional identification seems the exception rather than the rule – old explanantia can rarely be simply identified with (a species of) new explanantia. Rather, in ontology as in science, the replacement of explanatory vocabulary takes a more complicated route, allowing for partial matches of descriptive features connected with old and new categories and their respective models.

The primary aim of a theory of categorial inference would appear to be to collect and present the theory's data – the categorial inferences characteristic of the ultimate genera in question – in a comprehensive and systematic fashion. A clear separation, in any particular contribution to ontology, between inferential data targeted and explanantia suggested would thus prove more helpful to the discipline than invectives against 'revisionary' ontologies or the entanglement of ontology with metaphysical realism.

[40] For a more detailed presentation of Sellars' procedure in the Carus Lectures cf. Seibt (2000b).

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